Remarks

Entry of the amendments, reconsideration of the application, as amended, and allowance of all pending claims are respectfully requested in light of the remarks below. Claims 25-28 and 53-73 remain pending.

By this amendment, independent claims 25 and 53 are amended to further clarify the type of errors being detected and corrected. Further, claim 57 is amended to address a §112 objection. This amendment constitutes a bona fide attempt to advance prosecution of this application, and is not meant to acquiesce to the outstanding rejections. Support for these amendments can be found throughout the application. See, for example, p. 25, line 22 – p. 26 line 6; p. 35, lines 24-30; p. 38, lines 13-31; p. 39, lines 1-9; p. 44 line 25 – p. 45, line 1; and FIGs. 12-16 (relative to claims 25 & 53); and p. 18, lines 5-16 and p. 33, lines 6-12 (relative to claim 57). Thus, no new matter is added to the application by any amendment presented.

Initially, the Office Action rejected claims 57-59 under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential elements. Applicants believe that the above-noted amendment to claim 57 addresses this rejection, and thus, reconsideration and withdrawal of the §112 rejection is respectfully requested.

Further, the Office Action rejected claims 25, 26, 53, 54, 72 & 73 under 35 U.S.C. §102(b) as being anticipated by Kosugi et al. (U.S. Patent No. 5,694,265; hereinafter, "Kosugi"). This rejection is respectfully, but most strenuously, traversed to any extent deemed applicable to the amended claims presented herewith.

Applicants' invention is directed, in one aspect, to the detection and correction of errors in the writing of timing patterns on a storage medium. These errors are systematic (i.e., non-random) and they vary with circumferential position (e.g., with sector number) while remaining relatively constant with respect to neighboring tracks. Further, these errors are timing errors, which are along-track errors in the writing of timing patterns, rather than across-track errors,

which are non-timing errors. Thus, the errors addressed by applicants' recited detection and correction scheme are circumferential systematic timing errors.

As one example, applicants claim a technique for correcting for systematic errors in the writing of timing patterns on a storage medium by a head of a recording device (e.g., claim 25). This technique includes, for instance, detecting one or more circumferential systematic timing errors, wherein a circumferential systematic timing error is an along-track error that varies with circumferential position; and correcting for the one or more circumferential systematic timing errors. Applicants respectfully submit that at least the features of detecting and correcting for one or more circumferential systematic timing errors are not taught or suggested by Kosugi.

Kosugi describes a disk apparatus that detects head position using phase servo information in a manner that resists effects of noise and jitter (see Abstract; col. 4, lines 60-62). The positioning scheme of Kosugi accounts for systematic errors that vary in the radial direction (see, e.g., col. 49, lines 52-67). This position detection technique is quite different from the present invention.

For example, applicants' claimed invention recites, in part, detecting and correcting for one or more circumferential systematic timing errors, wherein a circumferential systematic timing error is an along track error that varies with circumferential position. In contrast, Kosugi does not address timing (along-track) errors at all. Instead, Kosugi discloses radial systematic errors (also known as systematic position error signals (PES)) associated with drive operations (see, e.g., col. 49, lines 52-67; see also FIG. 78). These radial systematic errors are across-track, rather than along-track (i.e., timing) errors. Thus, Kosugi does not teach or suggest the detection or correction of timing errors, let alone the detection and correction of the one or more circumferential systematic timing errors recited by the claims presented herewith.

In support of the rejection of the prior independent claims 25 & 53, the Office Action stated that the correcting and detecting of circumferential errors is taught by Kosugi at col. 18, lines 34-50 and by FIG. 7 thereof. These cited portions of Kosugi address the detection and correction of thermal errors, which result from temperature fluctuations of the disk apparatus.

These thermal errors are associated with position control signals output to a D/A converter coupled to the voice coil motor (VCM) (col. 18, lines 42-43; FIG. 7). The usage of such position control signals indicate that the errors being addressed are radial errors that vary across-track. As noted, these across-track errors are not timing errors, and therefore, are not descriptive or suggestive of circumferential systematic timing errors, as claimed by one aspect of the present invention.

To summarize, Kosugi fails to teach or suggest at least the above-described recited features of detecting and correcting one or more circumferential systematic timing errors. Thus, applicants respectfully request reconsideration and withdrawal of the anticipation rejection of independent claims 25 & 53.

Relative to the §102 rejection of independent claims 26 & 54, applicants recite a technique for correcting for systematic errors in the writing of timing patterns on a storage medium by a head of a recording device. The technique includes, for example, detecting one or more circumferential systematic errors, wherein the detecting includes computing an integral correction value for a time interval, wherein a non-zero integral indicates a circumferential error; and correcting for the one or more circumferential systematic errors. Applicants submit that multiple features recited in these independent claims are not taught or suggested by Kosugi.

For example, applicants recite computing an integral correction value. This integral correction value is, for instance, an integral algorithm correction, which is defined by the following formula found at p. 45, line 1 of applicants' specification:

$$IAC_i = IAC_i + AC_i$$

where IAC is the integral algorithm correction and AC_i is the algorithm correction indexed by, for example, various sectors indicated by the subscript "i". The algorithm correction (AC) is computed with a formula that uses a correction measured interval (CMI) and a target average interval (TAI) (see p. 44, lines 17-19 of applicants' specification; see also, p. 35, line 21 and p. 42, line 27 – p. 43, line 1).

In contrast, Kosugi does not discuss or suggest the computing of the integral correction value noted above. In fact, Kosugi does not detect or correct errors using an integral value at all. That is, Kosugi does not detect or correct an error using a computation based on measurements at multiple radial locations. Instead, Kosugi is directed to taking a single location (non-integral) measurement for each positional error. For example, each value within the thermal offset correction table in Kosugi corresponds to one measurement by the thermal offset measuring section and to one rotating position at which the measurement was taken (see, e.g., col. 18, lines 34-40). Kosugi then uses a thermal offset correcting section that simply uses one (non-integral) correction table value to correct a position (col. 18, lines 40-44). Again, this correction process in Kosugi does not operate on these measurements collectively to generate the integral correction value recited by the present invention.

Further, applicants recite that the above-described computation is for a time interval. For example, the integral correction value is used to compute a target time interval. See, e.g., the computation of TI (target interval), which uses the above-described IAC_i value (p. 45, lines 2-7 of applicants' specification). Since Kosugi does not teach or suggest the integral correction value computation (as noted above), it follows that Kosugi does not describe or suggest such a computation for a time interval. Again, Kosugi addresses the measurement of across-track positional errors, which are not timing errors. Applicants respectfully submit that there is no need in Kosugi's positional error detection and correction scheme to generate a computation of a correction value directed to the time interval recited in one aspect of applicants' claimed invention.

The Office Action cited the thermal offset correction table as disclosing that a non-zero integral indicates a circumferential error. As noted above, this thermal offset correction table does not teach or suggest the computed integral correction value recited by the present invention. Applicants respectfully submit that it follows that this table does not describe or suggest any particular computation of an integral correction value, such as a non-zero integral, let alone a non-zero integral that indicates circumferential error, as claimed by one aspect of applicants' invention.

Since Kosugi fails to describe, teach or suggest integral correction values, time intervals and integral correction values for time intervals, applicants respectfully submit that claims 26 and 54 are patentable over Kosugi.

Applicants gratefully acknowledge the allowance of claims 60-71, the indication of allowability of claims 57-59, if rewritten or amended to overcome the §112 rejection, and the indication of allowability of claims 27, 28, 55 & 56, if rewritten in independent form. Applicants believe the above-described amendment of claim 57 overcomes the §112 rejection, and request an indication of allowance for independent claim 57 and for claims 58-59 that depend therefrom. Applicants have not rewritten claims 27, 28, 55 & 56 in independent form at this time, since applicants believe the claims from which they depend are patentable.

For the above reasons, applicants respectfully request reconsideration and withdrawal of the anticipation rejection of independent claims 25, 26, 53 & 54. The dependent claims are believed patentable for the same reasons as the independent claims from which they directly or ultimately depend, as well as for their own additional characterizations.

All claims are believed to be in condition for allowance and such action is respectfully requested.

Should the Examiner wish to discuss this case further with applicants' attorney, the Examiner is invited to telephone their below-listed representative.

Respectfully submitted,

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